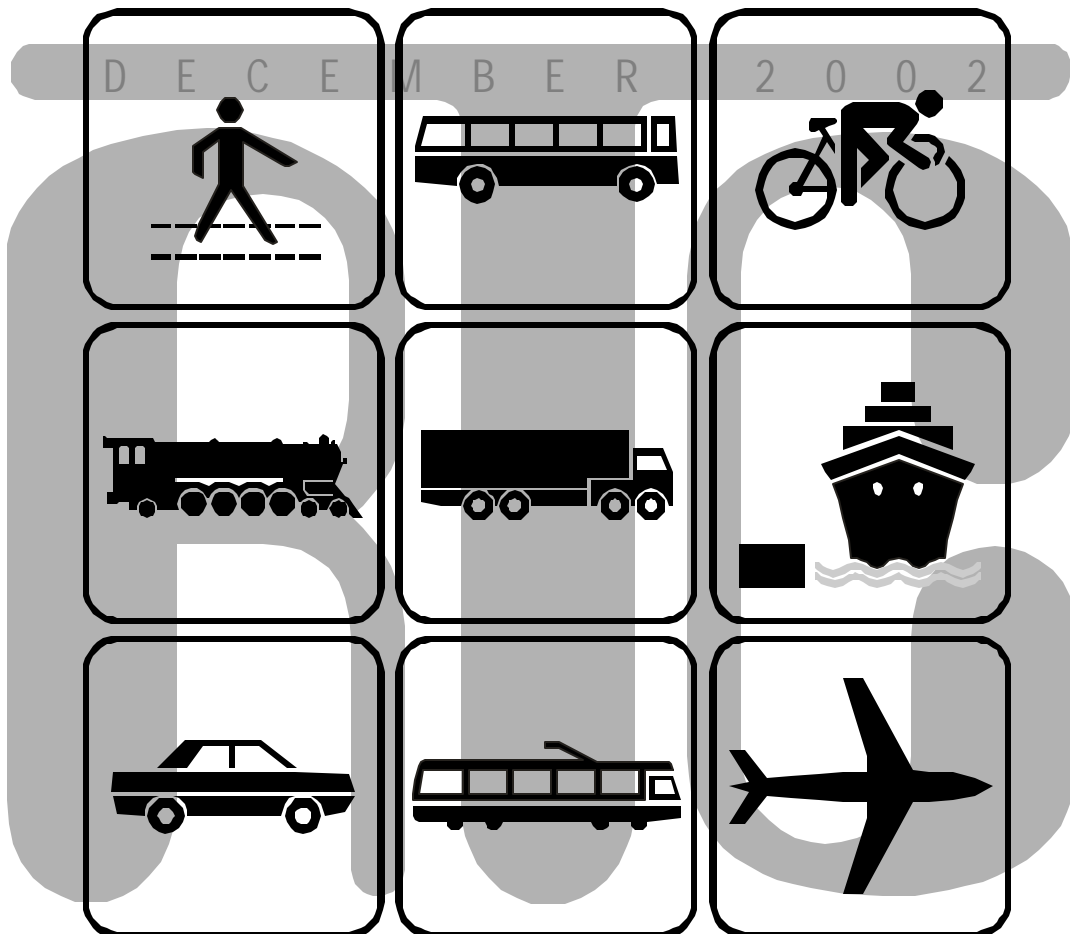


Metropolitan Transportation Plan for Clark County



Southwest Washington Regional Transportation Council

CHAPTER 2

LAND USE, GROWTH AND TRANSPORTATION

LAND USE AND TRANSPORTATION

In developing a metropolitan transportation plan the fundamental relationship between transportation and land use should be recognized and the effect that land use and growth have on transportation considered.

The linkage between land use and transportation is a complex issue but on a simple level the linkage can be thought of as working in two ways:

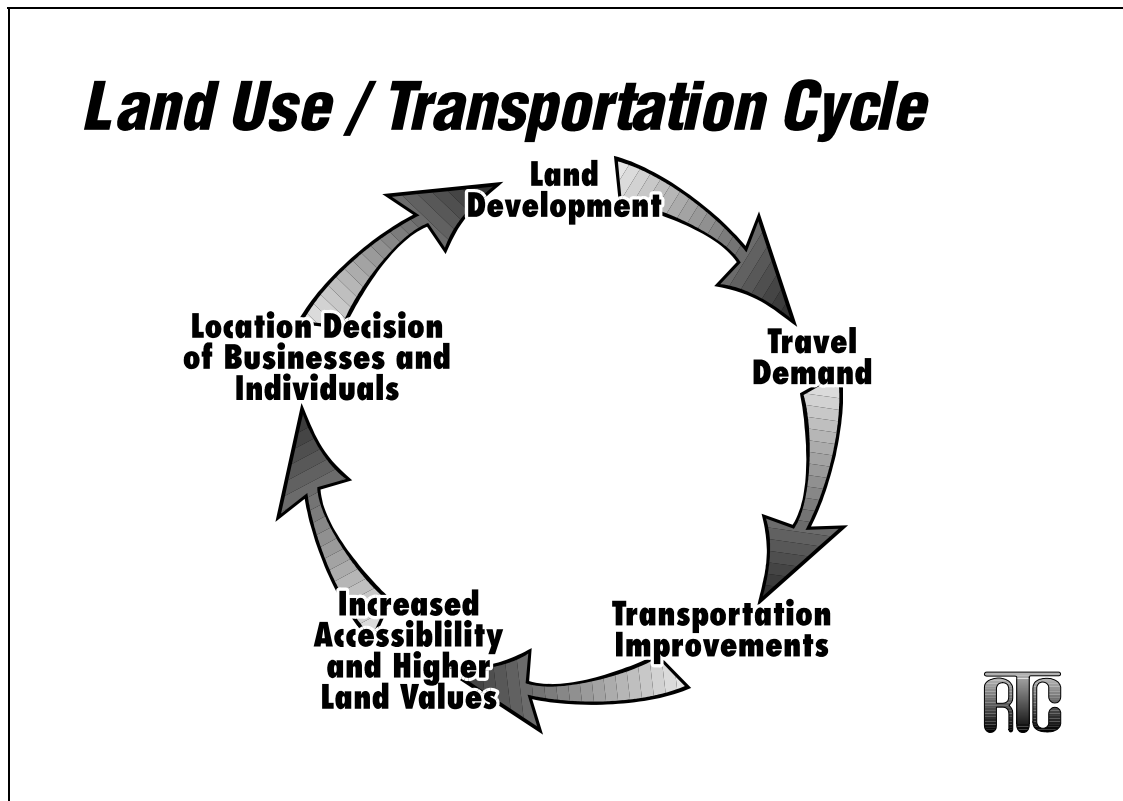
- 1) The spatial distribution and type of land use activity influences both the demand for travel and travel characteristics.

Different types of land use generate and attract differing traffic rates, for example, retail land uses will generate more trips than residential land uses.

- 2) Improving access by expanding the transportation system allows for the development of land that was formerly inaccessible.

The Land Use/Transportation cycle is illustrated in Figure 2-1.

Figure 2-1: Land Use/Transportation Cycle



The Washington State 1990 Growth Management Act (GMA) recognized the importance of the linkage between land use and transportation. The Act requires that local comprehensive plans include a transportation element. Under the GMA, RTPOs were established to extend transportation planning. RTC was designated as RTPO for a three-county region which includes Clark, Skamania and Klickitat counties. The RTPOs were authorized to review the transportation elements of local comprehensive plans and certify that they comply with the GMA that requires consistency between land use and transportation elements.

Land use and transportation are inter-linked; land use activities largely determine travel demand and desire. When different land uses are segregated, length of trips tends to increase. These longer trips are usually served more conveniently by the automobile, thus reducing the use of transportation alternatives, such as walking or transit, to meet mobility needs.

GROWTH AND DEVELOPMENT

Sustained economic development and growth within a region is desirable because of the economic benefits that increased employment and a larger tax base can bring. However, while growth can contribute to the health of a region's economy it can also have adverse impacts. Unmanaged, fast rates of growth can have a severe impact on the ability of a community to provide needed infrastructure and services. The costs of growth can include worsening levels of traffic congestion, decline in air quality, and overall degradation of the quality of life.

The need to maintain economic viability and, at the same time, quality of life is a challenge. Components which contribute to a desirable quality of life include job opportunities, affordable housing, a healthy environment with clean air and recreational opportunities. An efficient, safe transportation system contributes to the quality of life for residents of a region and can act as an attractor for economic development.

GROWTH IN CLARK COUNTY

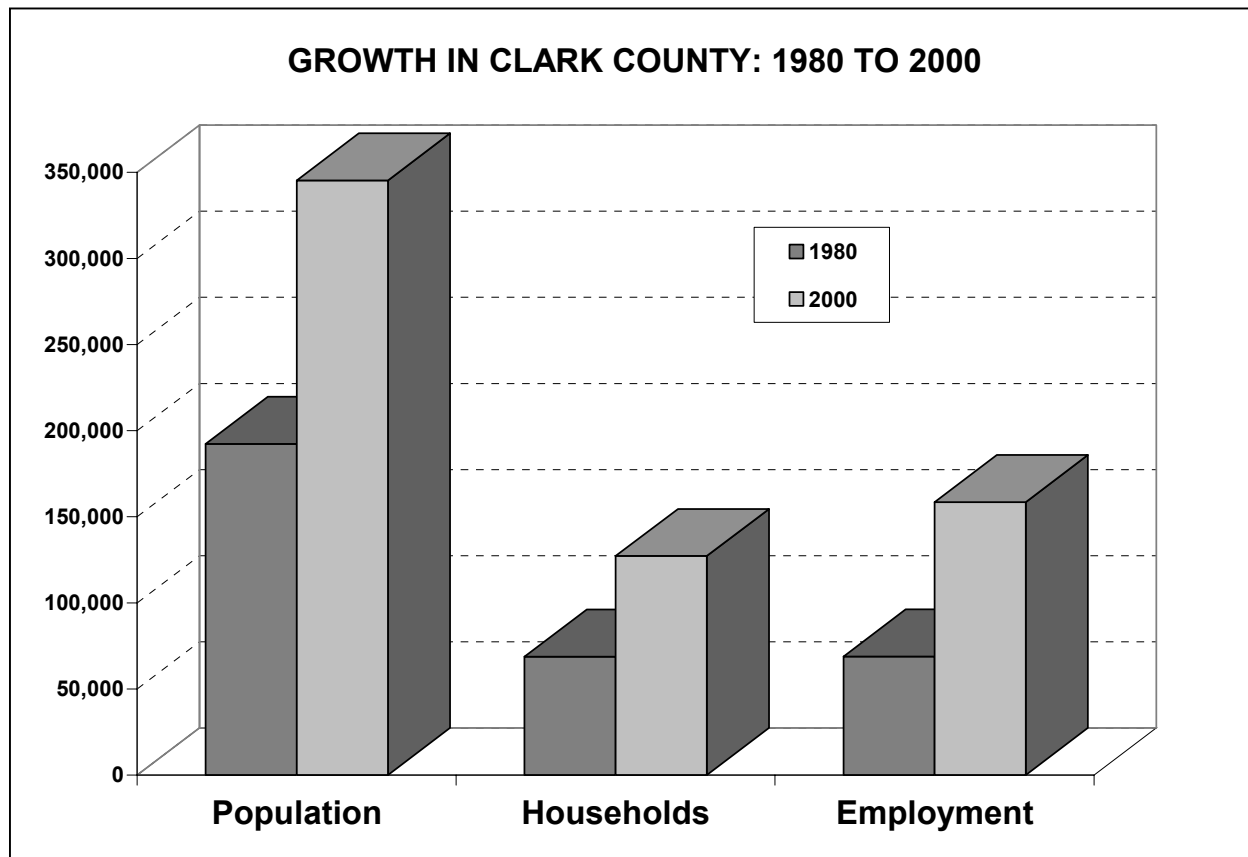
Clark County has seen significant rates of growth in the last two decades. Between 1980 and 2000 the population of the county increased by 80% from 192,227 in 1980 to 345,238 in 2000 while the number of households increased by 85% from 68,750 in 1980 to 127,208 in 2000 (see Figure 2-2). The 1980 to 2000 increase in total employment¹ in the county was 130% from 68,859 in 1980 to 158,535 in 2000. Washington State's Office of Financial Management (OFM) estimates that Clark County's 2002 population is at 363,400. The rapid growth seen in the County in the last two decades has increased demands on the regional transportation system.

Development of a transportation policy plan to provide for mobility of people and goods has to consider how to plan for a transportation system which can support increases in travel demand caused by growth in population and employment. At the same time this system has to be

¹ MTP total employment includes total employment as measured by the federal Department of Commerce, Bureau of Economic Analysis (BEA). Total employment includes all wage and salaried jobs as well as proprietors jobs that includes sole proprietor, self employed and farm employment.

affordable and minimize environmental impacts to maintain the quality of life. A safe, efficient transportation system can work to enhance economic development within a region and development of the transportation system in conjunction with land use plans can contribute to positive growth management.

Figure 2-2: Growth in Clark County, 1980-2000



Sources: U.S. Census Bureau, U.S. Bureau of Economic Analysis

EXISTING LAND USES IN CLARK COUNTY

From the City of Vancouver, the urban hub of the county on the banks of the Columbia River, Clark County spreads through a rapidly growing suburban band, across agricultural lands and a network of smaller cities and towns to the slopes of the Cascade Mountain Range. The county is compact, measuring approximately 25 miles across in either direction and has an area of 405,760 acres (627 square miles).

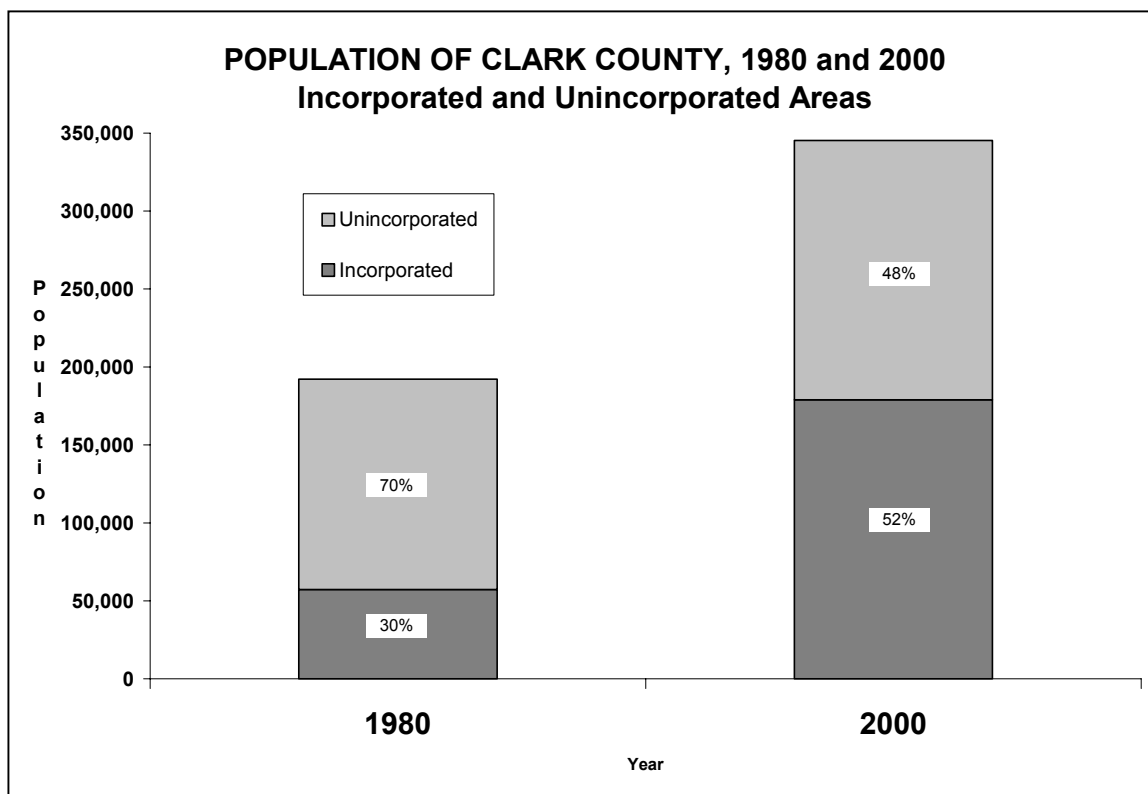
Clark County's growth was stimulated by the development of "traditional" industries such as pulp and paper manufacturing, aluminum production and, during the wartime years, shipbuilding activities. In recent years the county has proved to be attractive to new manufacturing activities; the region is able to offer reasonably priced land for development in an attractive setting within a metropolitan area. Power is affordable and the region's location on the Pacific Rim, with easy access to Portland International Airport, has contributed to its growth and development. With

the establishment of "new" high technology industries the region has been successful in diversifying its economic base. Major employers include Hewlett-Packard, SEH America, Georgia-Pacific Corporation, Fred Meyer, Southwest Washington Medical Center, Frito-Lay, Burlington Northern Railroad, Wafertech, Columbia Machine, AVX Vancouver Corporation, Matsushita Kotobuki Electronics Industries of America (MKA), the Vancouver Clinic, Sharp Microelectronics, and Underwriters' Laboratory.

Clark County's location on the northern periphery of the Portland metropolitan area has contributed to the significant growth in residential developments and employment activities within the county in recent years. The nationwide trend toward development of the suburbs of metropolitan areas for residential developments, as well as employment activities, is apparent in this region. This development trend has implications for the provision of transportation infrastructure and services.

In Clark County the past two decades has seen population growth in both the incorporated and unincorporated areas. Between 1980 and 2000 the incorporated areas saw a growth in population of 213% (57,248 population in 1980 to 178,959 in 2000) while the growth in the unincorporated areas was 23% (from 134,979 population in 1980 to 166,279 in 2000). The proportion of the population living in the unincorporated areas decreased from 70% in 1980 to 48% in 2000 while the proportion living in the incorporated areas increased from 30% in 1980 to 52% in 2000 (see Figure 2-3). Annexations by the City of Vancouver and the County's smaller cities have produced this trend. A large annexation of the Cascade Park area to Vancouver took place in 1997 when Vancouver became the State's fourth largest city. In 1996, the City of Vancouver's population was at 67,450 and in 2002 it is estimated at 148,800.

Figure 2-3: Incorporated and Unincorporated Population, 1980 and 2000



Sources: Washington State Office of Financial Management (OFM)

The provision of public facilities and services, including transportation facilities such as highways, bicycle lanes and pedestrian paths as well as transit services, is a principal determinant of land use patterns. Contemporary land use patterns in Clark County have evolved largely as a result of dependence on the automobile for mobility of its residents. An examination of land use maps for Clark County indicates that residential and commercial development has spread out along Highway 99, Fourth Plain, Mill Plain and SR-14. The opening of SR-500 and I-205 stimulated growth in the Vancouver Mall and Cascade Park/East County areas in the late 1980's and 1990's by offering increased accessibility to the two areas.

The City of Vancouver had seen relatively small growth in its population in the 1970's and 1980's. However, several significant annexations of land into the City boosted its population from 65,360 in 1995 to 127,900 in 1997. In 2002, Vancouver's population is estimated at 148,800. Several new office buildings have opened in downtown Vancouver and efforts are underway to revitalize the downtown area with apartments under construction, plans for new office buildings and an events center. However, the focus for retail activity has shifted to the Vancouver Mall area. The Vancouver Mall area was annexed to the City of Vancouver in 1992.

The Vancouver Mall area was a relatively isolated and undeveloped tract of the unincorporated County when the 918,000 square foot shopping mall was constructed in two phases in 1977 and 1980. However, the improved access provided by the completion of the I-205 Glenn Jackson Bridge in 1982 and SR-500 in 1984, contributed to the area's rapid development in recent years.

New commercial, retail, and residential developments have been attracted to the area, including offices, shops, restaurants, hotel units and apartments. The first phase (over 440,000 square feet) of Vancouver Plaza, a retail development on 45 acres to the south-west of Vancouver Mall, opened in fall 1988 and the Parkway Plaza development to the west of the Mall has seen the completion of several large office buildings.

The Glenn-Jackson Bridge that carries I-205 traffic across the Columbia opened in 1982. This provided a second Portland-Vancouver area river crossing. It relieved the bottleneck on I-5 and opened up access to the Portland region, including access to Portland International Airport located just to the south west of the bridge, from east Clark County. Rapid development of the area to the east of I-205 followed. A lot of the County's 1990's growth focused on the Mill Plain and 164/162nd Avenue corridors in east County. A mix of residential, commercial and business development has taken place. Residential development ranges from the adult community at Fairway Village to numerous large apartment developments and the Fisher's Landing development. Commercial development began in the area in 1978 when Fred Meyer opened a shopping center at Chkalov and Mill Plain. Others were quick to realize the area's commercial potential. Recent commercial developments have included the Fred Meyer development at SE 164th Avenue and SE 20th Street and the Mill Plain Town Center, anchored by Target, at Mill Plain and 164th Avenue. Business center developments include Columbia Tech Center and Stonemill Business Park.

Provision of public facilities and services, including transportation, has shaped the development of land uses in Clark County up to the present and will continue to do so in the future.

LAND USE: PLANS FOR THE FUTURE

Comprehensive plans are the means by which local jurisdictions plan for their future growth and development; they can provide a process for anticipating and influencing the orderly and coordinated development of land. Within Washington State planning authority is delegated by the state to local governments in RCW 36.70A, 35.63 and 35A.63. Before passage of the Growth Management Act, comprehensive plans were required to have a land use element showing the general distribution and location of land for various uses, as well as a circulation element showing the street system and transportation routes. Under planning provisions contained in the 1990 Growth Management Act, now codified in RCW 36.70a and RCW 47.80, local comprehensive plans become the basis for defining and integrating land use, transportation, capital facilities, public utilities and environmental protection elements. Within the comprehensive planning process these elements have to be inter-related and there has to be consistency between them. The GMA legislation requires that land use decisions should not be made without consideration of transportation needs and impacts.

CLARK COUNTY JURISDICTIONS' COMPREHENSIVE LAND USE PLANS AND ZONING - THEIR USE IN THE REGIONAL TRANSPORTATION PLANNING PROCESS

As part of the Growth Management planning process, Clark County adopted a *Community Framework Plan* in April 1993 to serve as a guide for the County's long-term growth over a period of fifty plus years. The *Framework Plan* envisions a collection of distinct communities; a

hierarchy of growth and activity centers. Land outside the population centers is to be dedicated to farms, forests, rural development and open space. The twenty-year *Comprehensive Growth Management Plan for Clark County* is to guide the growth of the County toward the future vision. Growth Management plans for the urban areas of Clark County were developed by Clark County and the cities and town of the region through a Partnership Planning process. Plans for the rural and natural resource lands are handled by Clark County. GMA plans for the County and urban areas were subject to review under the State Environmental Policy Act (SEPA). In September, 1994, the *Final Supplemental Environmental Impact Statement for the Comprehensive Growth Management Plans of Clark County, Battle Ground, Camas, La Center, Ridgefield, Vancouver, Washougal, Yacolt, Volume I and Public Comments, Volume II* was published by Clark County. The public was given many opportunities to be involved in and provide input to the planning process. In December of 1994 the GMA plans for Clark County were adopted and in May of 1996 revisions were adopted. The twenty year plans include urban area boundaries.

Comprehensive plans are used in the regional transportation planning process as the basis for determining future land uses and identifying where future development is likely to occur. The visionary land use development strategy presented in the *Community Framework Plan* and 20-year GMA Plan was used as the basis for determining the future demographic distribution throughout Clark County.

Currently the Comprehensive Growth Management Plan for Clark County is in the process of being updated. The update is due to be adopted by the end of 2003. The update to the Plan will be the basis for the next MTP update that will follow completion of the GMA Plan update process.

POPULATION AND EMPLOYMENT FORECAST

For the Portland-Vancouver metropolitan region as a whole, demographic forecasts are usually formulated through a cooperative planning process led by the Metropolitan Service District (Metro), Portland, Oregon. The forecast region includes Clark County in Washington State, as well as Multnomah, Clackamas, Washington and Yamhill counties in Oregon. Worldwide, national and regional economic assumptions are the basis for determining future forecast demographics in the region. The Growth Management Act passed in Washington State in 1990 requires that Growth Management Plans have to support a population forecast developed by the Washington Office of Financial Management (OFM). The GMA directs OFM to prepare twenty-year GMA planning projections that are updated every five years. Each County's GMA projection is expressed as a range between a reasonable High and Low projection. Counties select a GMA planning population within the range released by OFM. In this region, OFM consults with Metro and local jurisdictions in determining the forecast. In January 2002, OFM released the GMA County projections to 2025. For Clark County, the OFM projected 2023 population falls within a range from a low of 465,591 to a high of 600,963 with a mid-range projection of 530,962.

For GMA and MTP update purposes, Clark County has chosen to use a 2023 population projection of 486,225. The number of households is forecast to be 200,094, and total

employment is forecast to be 248,396 with 18.5% (46,048) of the employment being in retail jobs. The 2023 forecasts represent a 41% increase in population from a 2000 population of 345,238, a 57% increase in households, and a 57% increase in employment from 158,535 total full- and part-time jobs in Clark County in 2000 (see Figures 2-4 and 2-5).

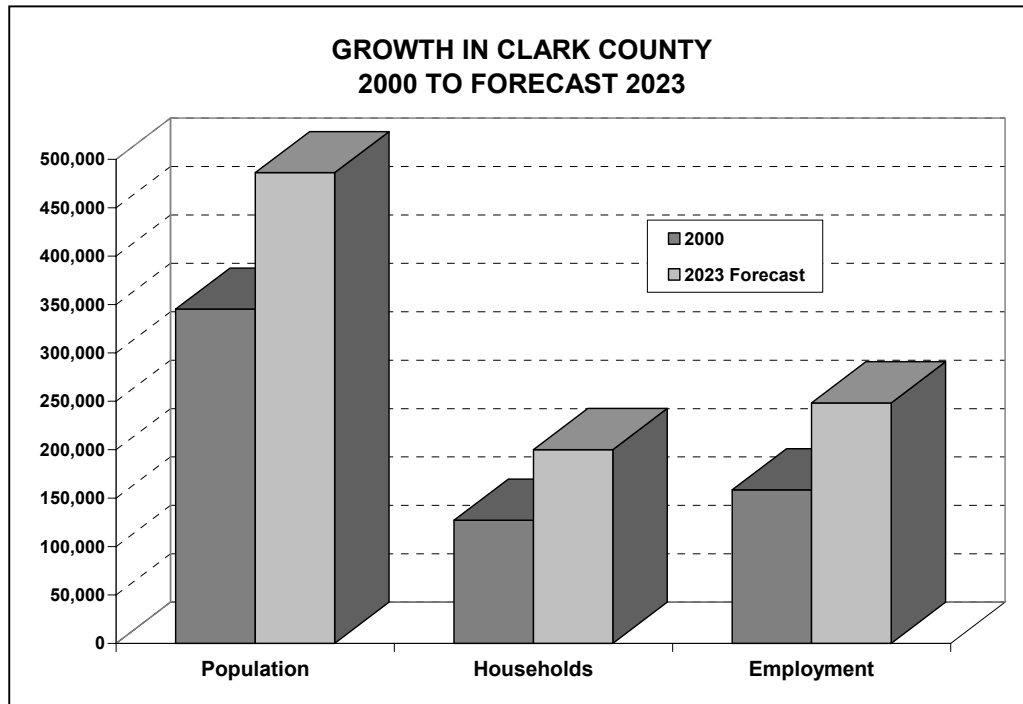
TRANSPORTATION ANALYSIS ZONES

In the regional transportation planning process the forecast growth in housing and employment for the year 2023 is converted into projections of future travel demand. For the purpose of analyzing future travel demand, a "Transportation Analysis Zone" (TAZ) System is used. The Portland metropolitan area is divided into TAZs; there are 615 zones in Clark County and 2 Clark County external zones. For each Clark County TAZ, the comprehensive plan land use designations and existing zoning are used as a basis for distributing 2023 forecasts for housing and employment. The demographic distributions are based on the County Assessor's data, building permit data and on vacant, buildable lands analysis.

DISTRIBUTION OF FUTURE GROWTH

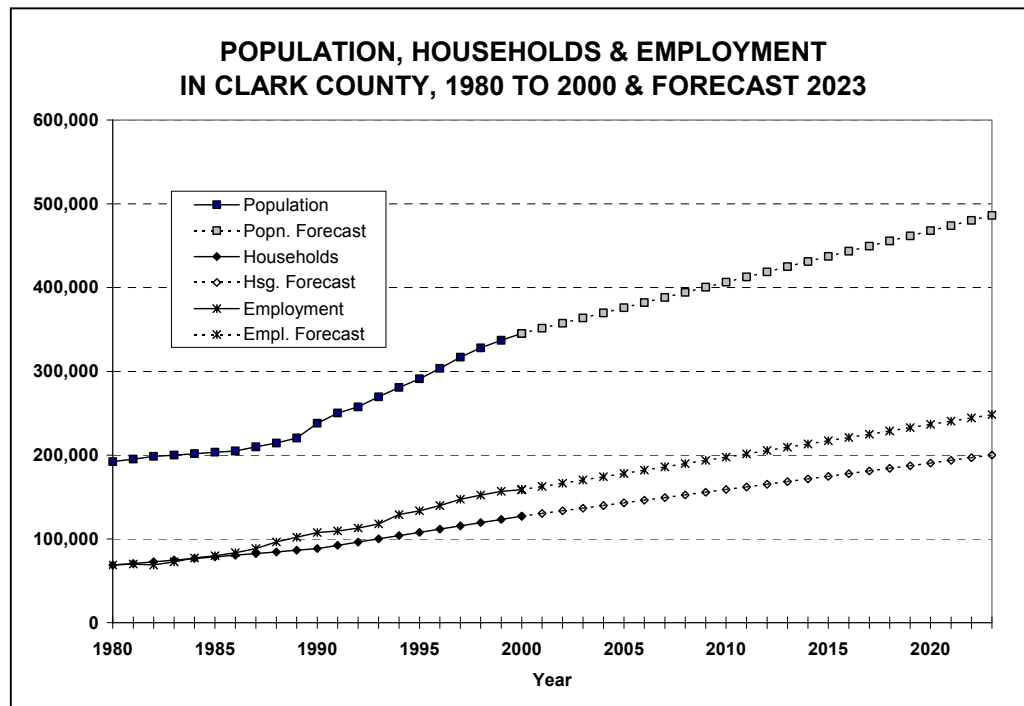
As described above, the population of Clark County is forecast to grow by 140,225 during the planning period from 2000 to 2023 and employment is set to grow by 92,209. GMA plans call for the focus of development to be in three growth centers within the Vancouver UGA: Downtown Vancouver, Vancouver Mall and the Salmon Creek/Washington State University vicinity. Denser patterns of development are to be encouraged along the main transportation corridors where there is transit service. In designated High Capacity Transit corridors, I-5, I-205 and SR-500/Fourth Plain, densities and appropriate urban designs are to be encouraged to maximize the efficiencies of land use and transit development. The smaller cities of Clark County are planning for denser development and expansion of their urban boundaries as they become the focus for growth outside of the core urban area of Vancouver.

Figure 2-4: Growth in Clark County, 2000 to Forecast 2023



Sources: U.S. Census Bureau, U.S. Bureau of Economic Analysis, Washington State Office of Financial Management (OFM), and Clark County

Figure 2-5: Population, Housing and Employment in Clark County, 1980 to 2000 & Forecast 2023



Sources: U.S. Census Bureau, U.S. Bureau of Economic Analysis, Washington State Office of Financial Management (OFM), and Clark County

DEMOGRAPHIC AND LAND USE TRENDS

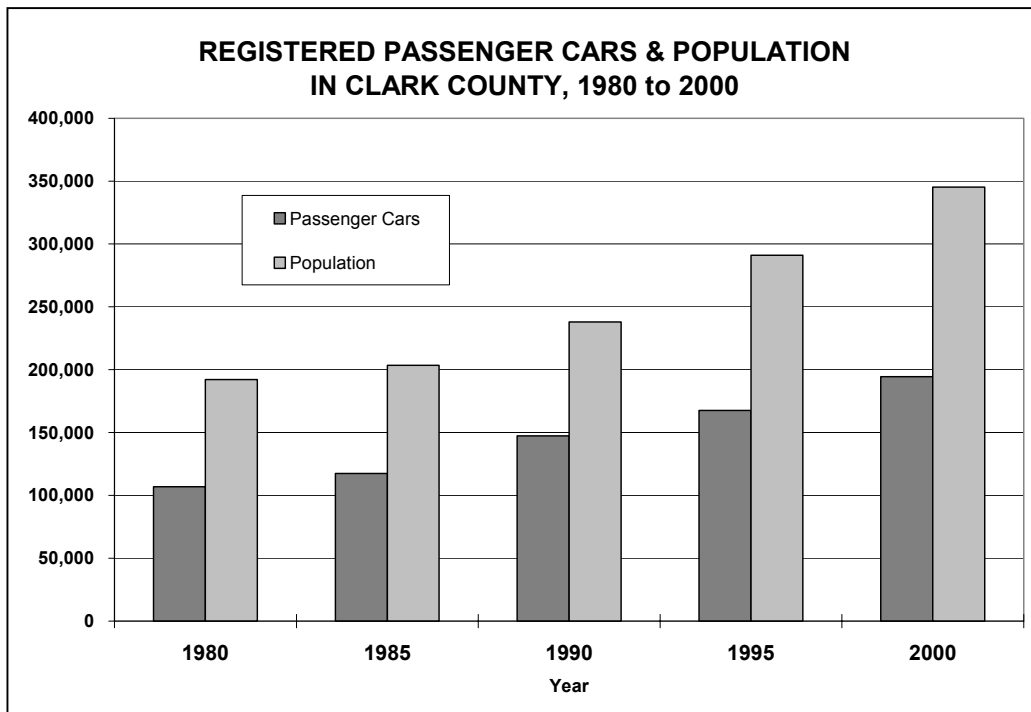
Growth in population and employment, development and resulting land use patterns together with its distribution all affect travel demand. However, other demographic factors also influence travel demand. These factors include household size, workforce participation, employment patterns and vehicle ownership. While the decades of the 1970s and 1980s saw significant change in these demographics, the decade of the 1990s has not seen as much change.

Household size is one of the most significant demographic factors that influences land use and demand for transportation services. In the decade of the 1980s there was a trend toward smaller household size due to more single-person households and smaller family size. In 1980 the average number of persons per household in Clark County was 2.76 but by 1990 it had fallen to 2.69. The decade of the 1990's saw no change in average household size in Clark County with the 2000 U.S. Census recording an average 2.69 persons per household in Clark County. By 2023 the number of persons per household is expected to decrease to around 2.43 persons per household. Decreased household size can result in development pressures for more housing and further expansion of land for residential uses to accommodate the additional houses. Expansion of residential land uses requires improvements and expansion to the transportation system to access new and developing residential areas. However, over the past two decades, the ratio of single family to multi-family housing has changed in Clark County with a move toward more multi-family housing. In 1980 there were 81% single family (including mobile homes) compared with 19% multi-family housing units. By 2000 these housing numbers had changed to 77% single family and 23% multi-family.

Another demographic trend that affects travel demand is the increase in two-worker households. Typically, the two workers in the household each use an auto to get to work, use the auto for work purposes while at work, use it to run errands at lunch time and before or after work and, if they have a family, to take their children to daycare facilities. All result in people's increased reliance on the automobile that people consider their most convenient transportation mode. Employment patterns have also been changing, with a relative decline seen in the traditional, blue-collar, industrial jobs and an increase in service sector employment. Clark County has seen this change in employment structure and has seen growth in "high-tech" employment and a large increase in the retail sector in recent years. The number of jobs is increasing in suburban areas such as Clark County and employment is dispersing throughout the region. The "new" suburban places of employment have also tended to add to travel demand because of their dispersal, their design has catered to auto-commuters and they are not as easily served by transit service.

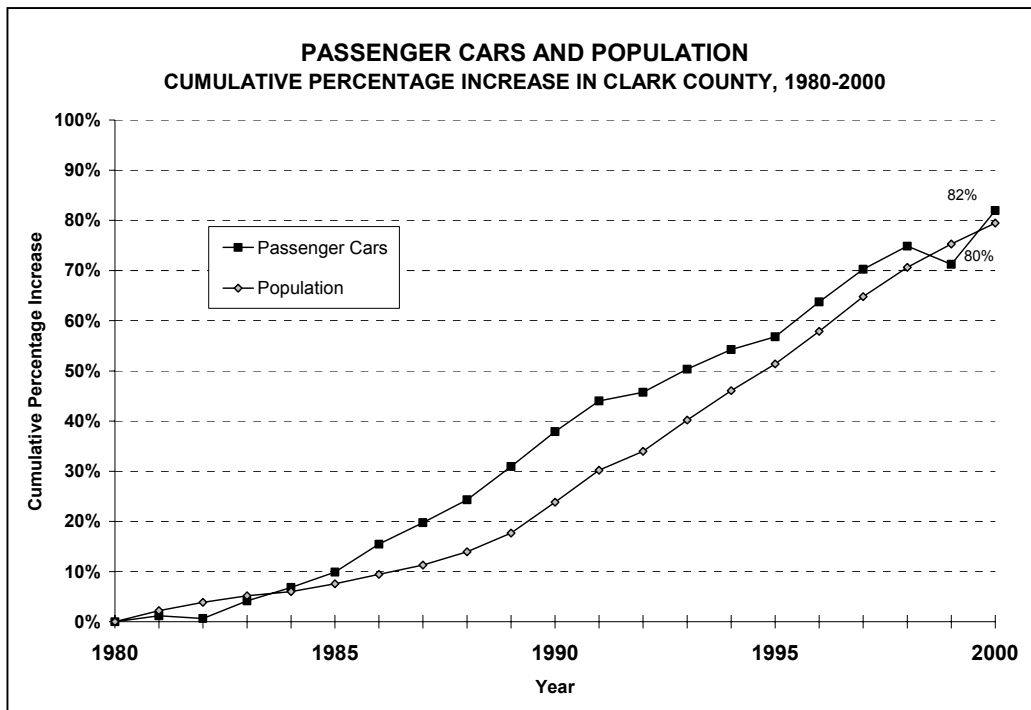
Travel demand has also grown as the number of registered passenger cars in Clark County has increased. From 1960 to 1980 there was a 171% increase in passenger cars registered in Clark County (from 39,502 to 106,889 cars). In the period, 1960 to 1980, population increased by 105% from 93,809 to 192,227. However, in the past two decades, from 1980 to 2000, the percentage increase in population and passenger cars has been very similar with an 82% increase in passenger cars and an 80% increase in population. (see Figures 2-6 and 2-7).

Figure 2-6: Registered Passenger Cars & Population in Clark County, 1980-2000



Source: U.S Census Bureau, Washington State Department of Licensing

Figure 2-7: Passenger Cars and Population, Cumulative Increase in Clark County, 1980-2000



Source: U.S Census Bureau, Washington State Department of Licensing

NOTE: 1999 vehicle registrations are influenced by Initiative-695; many people deferred registration of vehicles until 2000.

Table 2-1 shows the 1970 to 2000 increase in registered passenger cars and total registered vehicles (includes all trucks, commercial and recreational vehicles plus passenger cars) in Clark County. The number of passenger cars per household has increased at the same time as household size has decreased.

Table 2-1: Clark County Demographic Data, 1970, 1980, 1990 and 2000

| CLARK COUNTY GROWTH TRENDS: 1970, 1980, 1990 and 2000 | | | | | | | | | | |
|---|---------|---------------|------------|------------------------------------|-----------------------------------|--------------------|---------------------------|---|---------------------|-----------------------------------|
| Year | Popn. | Housing Units | Households | Persons per Household ¹ | Jobs in Clark County ² | Jobs per Household | Registered Passenger Cars | Registered Passenger Cars Per Household | Registered Vehicles | Registered Vehicles Per Household |
| 1970 | 128,454 | 42,816 | 41,064 | 3.10 | 43,050 | 1.05 | 62,586 | 1.52 | 95,788 | 2.33 |
| 1980 | 192,227 | 72,806 | 68,750 | 2.76 | 68,859 | 1.00 | 106,889 | 1.55 | 171,474 | 2.49 |
| 1990 | 238,053 | 92,849 | 88,440 | 2.69 | 107,642 | 1.22 | 147,401 | 1.67 | 238,629 | 2.70 |
| 2000 | 345,238 | 134,030 | 127,208 | 2.69 | 158,681 | 1.25 | 194,492 | 1.53 | 301,104 | 2.37 |

Source: U.S. Bureau of the Census, Washington State Department of Licensing and Washington Office of Financial Management.

¹ from census data

² Bureau of Economic Analysis (total jobs)

Tables 2-2 and 2-3 also provide information that compares 1990 and 2000 census demographic data which is of relevance in the metropolitan regional transportation planning process.

Table 2-2: Summary of Clark County Demographics

| | | 1990 | 1990 % | 2000 | 2000 % |
|-------------------------|--|----------------|--------|----------------|--------|
| Population | | 238,053 | | 345,238 | |
| Age: | Under 70 | 221,034 | 92.9% | 312,430 | 90.5% |
| | 70 and Over | 17,019 | 7.1% | 32,808 | 9.5% |
| Race: | White | 225,192 | 94.6% | 306,648 | 88.8% |
| | Black or African American | 2,976 | 1.3% | 5,813 | 1.7% |
| | American Indian and Alaska Native | 2,296 | 1.0% | 2,910 | 0.8% |
| | Asian* | 5,670 | 2.4% | 11,095 | 3.2% |
| | Other* | 1,919 | 0.8% | 18,772 | 5.4% |
| Origin: | Non-Hispanic/Non-Latino | 232,181 | 97.5% | 328,990 | 95.3% |
| | Hispanic/Latino | 5,872 | 2.5% | 16,248 | 4.7% |
| Language Spoken at Home | Population over 5 years | 219,563 | 100% | 318,152 | 100% |
| | Speak English Only | 207,291 | 94.4% | 281,613 | 88.5% |
| | Language other than English | 12,272 | 5.6% | 36,539 | 11.5% |
| | Speak English less than "Very Well" | 4,556 | 2.1% | 17,638 | 5.5% |
| Poverty: | Total Population for whom poverty status is determined | 212,660 | 100% | 341,464 | 100% |
| | Poverty Status (as defined by U.S. Census Bureau) | 21,910 | 10.3% | 31,027 | 9.1% |

Source: U.S. Census Bureau

* NOTE: Direct comparison between 1990 and 2000 data is not possible for some categories. In 1990, Asian and Pacific Islanders were grouped and there was no reporting on two or more races.

Table 2-3: Clark County Journey to Work

| Clark County | 1990 | 1990 Percent | 2000 | 2000 Percent | 1990 to 2000 Growth | 1990 to 2000 Percent Growth |
|---|------------|--------------|------------|--------------|---------------------|-----------------------------|
| Commuters | 108,945 | | 161,471 | | 52,526 | 48.2% |
| Drive Alone | 87,748 | 80.5% | 128,014 | 79.3% | 40,266 | 45.9% |
| Carpool | 12,017 | 11.0% | 18,089 | 11.2% | 6,072 | 50.5% |
| Transit | 2,275 | 2.1% | 4,228 | 2.6% | 1,953 | 85.8% |
| Other | 1,224 | 1.1% | 1,788 | 1.1% | 564 | 46.1% |
| Walk and Home | 5,681 | 5.2% | 9,352 | 5.8% | 3,671 | 64.6% |
| Mean Travel Time to Work (those that work outside home) | 21.2 mins. | N/A | 24.7 mins. | N/A | 3.5 mins. | 16.5% |

Source: U.S. Census Bureau

Growth in population as well as the other demographic factors described above has resulted in increase in travel demand to be met by Clark County's transportation system. Development of land, growth in population and travel demand requires a combination of expansion of public facilities and service provision and a revision to land use plans to ensure mixed use developments and better balance of jobs and housing throughout the region. One of the goals of the comprehensive plan for the Clark County region, developed under the Growth Management Act (GMA), is to reverse the trend of increased dependence on the automobile. In the comprehensive plan, land uses and transportation have been linked in the planning process and their inter-relationships considered in developing a vision for future growth and future growth patterns. In assessing future transportation needs for the Clark County region the comprehensive plans of its jurisdictions are used as a basis for analysis of the transportation system. The GMA requires that transportation system improvements be put in place 'concurrent' with land development.

Table 2-4: Summary of Clark County Growth Forecasts

| CLARK COUNTY 2000 TO 2023 GROWTH FORECASTS: MTP | | | |
|--|-------------|-----------------|----------------------------------|
| | 2000 | MTP 2023 | % Change 2000 to 2023 |
| Population | 345,238 | 486,225 | 41% |
| Households | 127,203 | 200,094 | 57% |
| Employment | 158,535 | 248,396 | 57% |